Wrist Block For Dupuytren's Fasciectomies -Is This A Viable Option Of Regional Anaesthesia?

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Citation

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Abstract

Background and Purpose: As there is little literature regarding wrist block, our study is an attempt to demonstrates that wrist block is a viable option of regional anaesthesia for dupuytren contracture release making this procedure to be performed as a day case.Patients and Methods: A consecutive cohort of 70 patients (81 digits) undergoing dupuytren contracture release under wrist block anaesthesia and upper arm tourniquet were studied retrospectively. Results: Wrist block was effective in all but 1 patient. All our patients tolerated the upper arm tourniquet except 3 patients. The average correction of deformity was 47 degrees at the PIP joint and 33 degrees at MCP joint of little finger and 37 degrees at the PIP joint and 31 degree at MCP joint of ring finger. Conclusions: Our study demonstrates that if certain simple measures are taken to minimize tourniquet time then wrist block anaesthesia can be considered as an option for duputyren contracture release.

INTRODUCTION

Dupuytren's disease is a common and disabling hand problem causing progressive digital flexion contracture. Being a disease with complex pathophysiology and high recurrence various treatment modalities has been developed which includes percutaneous fasciotomy, needle aponeurotomy, limited palmar fasciectomy, two-staged release using external fixators and dermafasciectomy for resistant recurrent disease[1,2,3,4,5,6] . In the present era majority of dupuytren's contracture release is performed under general or regional anaesthesia. Most of the patients are elderly with multiple medical co morbidities with increased risk for general anaesthesia. As there is little literature regarding wrist block, our study is an attempt to demonstrate wrist block as a viable option of regional anaesthesia for dupuytren contracture release.

PATIENTS AND METHODS

85 consecutive patients who underwent dupuytren's fasciectomy under wrist block and upper arm tourniquet were included in the study. All patients were operated by the same surgeon and the wrist block administered by the same anaesthetist. Case notes were reviewed. 15 cases were excluded, as the data available for them was insufficient. The final study group comprised of 70 patients and 81 digits.

The wrist block was performed using the anatomical landmark. After preparing the area with 2% chlorhexidine solution, 3-5 ml of 2% lignocaine and 3-5 ml of 0.5% bupivacaine was injected using a 23 G needle for each nerve. The adequacy of the block was assessed by observing cutaneous vasodilatation and hyperaemia in the hand and by testing for light touch and ethyl chloride cold spray in the nerve distribution. Nerve stimulator was not used in any of the cases.

The surgical procedure was a standard fasciectomy using Brunner's zigzag incision. The tourniquet was inflated after full preparation and draping of the hand, just before the actual surgical incision. The tourniquet was deflated as soon as the abnormal tissue excised and the deformity corrected. Haemostasis was achieved in all the cases under direct vision before the wound closure.

There were 70 patients and 81 digits. Of these, 61(87%) were male and 9(13%) female. The average age of the patients was 61 years (range between 41-87yrs). 38 patients (54%) had right-sided deformity and 32 patients (46%) had left sided deformity. 97% of the right sided deformity and 13% of left sided deformity were in the dominant hand. Of the 70 patients, 60 patients (86%) had primary disease and 10 patients (14%) had recurrent disease with 2 or more previous operations. Co-existing medical conditions included hypertension (23 patients, 33%), Ischemic heart

disease (6 patients, 8%), diabetes (14patients, 20%) and asthma (7patients, 10%). 31 patients (44%) were in ASA grade I, 33 patients (47 %) ASA grade II, 6 patients (9%) ASA grade III respectively.

29 patients (41%) had deformity of ring finger, 46 patients (66%) had deformity of little finger and 9 patients (13%) had deformity in both little and ring fingers. 1 patient had deformity in more than 2 fingers. Average deformity in PIPJ of little finger was 52 degree (range between) and MCPJ little finger was 37 degree (range between). In ring finger the average deformity in PIPJ was 41.48 degree (range between) and MCPJ was 33.95 degree (range between).

Additional drugs were used in 4 patients (4.2%). Of these, midazolam (2mg) was used in 3 patients, morphine (4mg) in 1 patients, and local infiltration with lignocaine or bupivacaine in 4 patients. One patient could not tolerate the procedure and had to be converted to general anaesthesia.

Follow up examination in all of these patients took place at 2 weeks and between 6-8 weeks postoperative.

RESULTS

The average correction of deformity in PIPJ of little finger was 47.31 degree and the MCPJ was 33.85 degree . The average correction of deformity in PIPJ of ring finger was 37.77 degree and the MCPJ was 31.73 degree.

Minimum tourniquet time in our study was 12min and the maximum was 40 min (average 22.5 min. All our patients tolerated the tourniquet well.

There was no recorded complication associated with the administration of nerve block. There were no recorded operative complications in the form of digital nerve or artery injury in any of the 70 patients. Postoperative complications were seen in 4 out of 70 patients (5.7%) in the form of superficial wound infection, which healed, with a five-day course of antibiotics in all of these cases. Haematoma formation or wound dehiscence was not seen in any of our patients.

Patients were asked to fill up a subjective satisfaction questionnaire when they were followed up in the clinic. 65 patients (92%) reported that they were pleased with the surgical procedure and would be happy to have it done again under local anaesthesia if required.

Figure 1

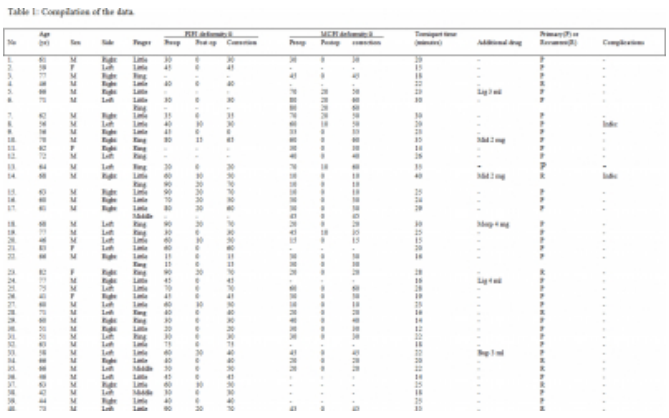
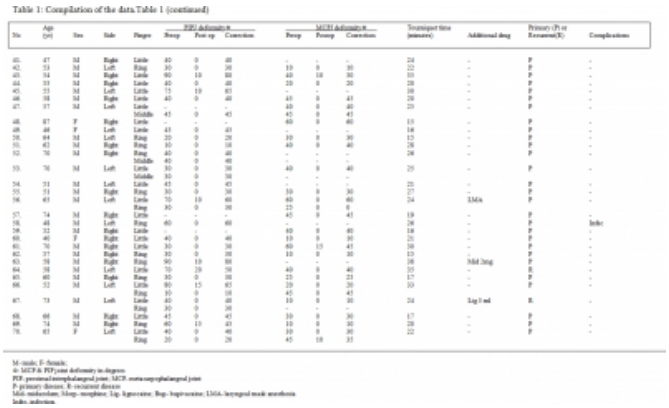


Figure 2



DISCUSSION

In the current era majority of the surgical procedures for dupuytren's contracture are done as a day case under general or regional anaesthesia [7,8]. Various techniques for regional anaesthesia have been described and the most popular of them being axillary block and Biers block [9,10,11,12,13]. Digital block using lignocaine and epinephrine have been described in a recent study [14].

Use of wrist block for dupuytren contracture release is infrequent in the literature. Dupont in 1972 reported using wrist block and local infiltration for hand surgery[11]. There is little literature about the use of wrist block anaesthesia and upper arm tourniquet for duputyren contracture release (Medline search using key words- local anaesthesia, wrist block, dupuytren contracture and fasciectomy yielded 1 result).

Brachial plexus block is the commonest choice of regional anaesthesia for surgical correction of Dupuytren's contracture[15]. Kuflik et al used interscalene block supplemented with a separate block for ulnar nerve for Dupuytren fasciectomy and had a success rate of more than

75% [16]. Axillary block with or without supplementary peripheral ulnar and sometimes-median nerve block is the anaesthesia of choice for Dupuytren contracture [17]. Efforts to improve success with peripheral nerve stimulator generally have not been successful [12,18,19]. Experience and skill of the practitioner who performs the block and selects the correct site for block are more important than the technique used. This is quite clearly demonstrated in our study.

The most important factor determining the success of peripheral block for Dupuytren contracture release is probably the use of upper arm tourniquet. Tourniquet pain can be a problem when upper arm is not adequately anaesthetised [20]. Winnie reports success in decreasing tourniquet pain by blocking the intercostals and medial brachial cutaneous nerve in the axilla. In our study, only 4 out of the 70 patients demanded the use of additional drugs (midazolam and morphine) in order to alleviate the discomfort caused by the tourniquet and these were those patients in whom tourniquet was used for more than 30 minutes. The reason for most of our patients tolerating the tourniquet was probably the relatively shorter tourniquet time. The average tourniquet time in our study was 22.5minutes, with a minimum time of 12 minutes and a maximum time of 45 min.

Despite the ubiquity of the application tourniquet in hand surgery, however, opinion is divided with regard to the timing of its removal. Some maintain the tourniquet inflated while closing the wound and apply a pressure dressing before finally releasing the tourniquet. According to the proponents, this practice avoids unnecessary haemostasis time and prevents the formation of oedema that can develop if the tourniquet is deflated at the end of the procedure before pressure dressing is placed [21]. Others will release the tourniquet prior to the wound closure in order to identify any bleeding that might arise and directly control it before closing. This in turn minimises postoperative haematoma without any untoward effect on wound oedema[28, 37]. In all our 70 patients we followed the following three methods to minimise the tourniquet time. Firstly, the tourniquet was inflated only after full preparation and draping of the hand just before the actual surgical procedure thus avoiding a few extra minutes of the tourniquet time, which on an average can be between 5-7 minutes. We did not use exsanguinations in any of our patients; the arm was elevated for 2-3 minutes while simultaneously cleaning and draping, before inflating the tourniquet. Thirdly in all our cases the tourniquet was deflated as soon as the abnormal band was excised and deformity corrected, which further minimised the tourniquet time by another 15-20 minutes. Hemostasis was achieved in all cases before wound closure.

In our series average improvement in extension at the MCP joint little and ring finger was 33 and 31 degree respectively and PIP joint of little and ring finger was 47 and 37 degree. In a recent study Denken reported an average improvement at MCP joint of 32 degree and PIP joint 25 degrees [14].

Wide range of complications is known to occur following Dupuytren contracture release. Digital neurovascular injury can occur in 4 and 7% [14,22,23]. In our series of 70 patients we did not encounter any case of digital nerve or artery injury.

Wound haematoma formation is one of the common problems with some series reporting an incidence of as high as 22% [6,14,22,23]. Haematoma formed in association with surgery may lead to increased rate of wound infection and skin slough. There was no documented case of postoperative haematoma formation in any of the 70 patients in our series. The most plausible explanation for this finding is that in our entire cases tourniquet was released and haemostasis achieved under direct vision before the wound closure.

The incidence of wound infection after Dupuytren's fasciectomies is around 1 percent [6,14,24]. In our study 4 out of the 70 patients (5.7%) had wound infection. All of these were minor superficial infection, which healed with five days course of oral flucloxacillin, although none of them had swabs for microbiological investigations.

CONCLUSIONS

Contrary to the popular belief that peripheral nerve block with upper arm tourniquet is not a very feasible option for Duputyren's fasciectomies, our study demonstrates that if certain simple measures are taken to minimize the tourniquet time then wrist block anaesthesia can be effectively used for duputyren contracture release. We believe that tourniquet is fairly well tolerated by patients up to around 30 minutes. Wrist block clearly has few advantages over general anaesthesia and the more proximal nerve blocks- less incidence of potentially serious complications, no motor blocks as seen with the higher blocks and shorter duration of hospital stay.

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